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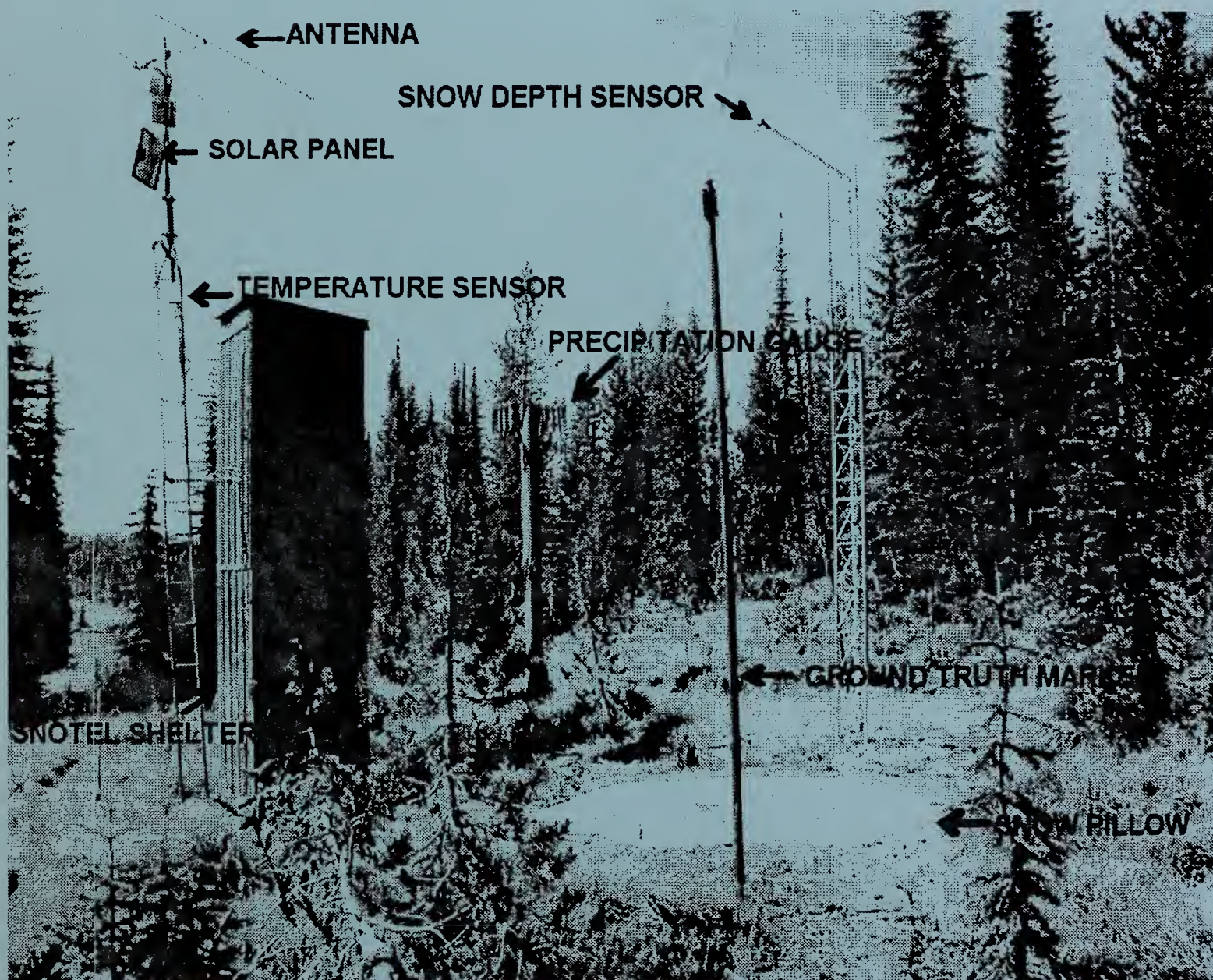


United States  
Department of  
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# Idaho Basin Outlook Report April 1, 2001

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Crater Meadows SNOTEL Site, North Fork Clearwater River Basin, Idaho

# Basin Outlook Reports

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**Internet Web Address**

**<http://idsnow.id.nrcs.usda.gov/>**

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### *How forecasts are made*

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30% and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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# IDAHO WATER SUPPLY OUTLOOK REPORT

*April 1, 2001*

## SUMMARY

Idaho water users should prepare for one of the lowest runoff years ever. April 1 snow water content levels are at record lows from the Clearwater basin north; the 2nd lowest across central, eastern and Bear River basins. The lowest streamflow forecasts are 20-40% of average in the Bear, Payette, Boise, Big and Little Wood, and Owyhee basins, some of these are near record low volumes. The highest forecasts are only 65% of average in the Henrys Fork basin, which are also near record low volumes. All the demands for this important natural resource will not be met this year. The key is using this valuable resource in the best manner possible. Irrigators will experience shortages and need to plan which crops and numbers of acres to plant accordingly. Fish water availability will be limited. Much less hydropower will be produced as a result of near record low snow levels in Idaho, the Pacific Northwest and southern Canada. Conservation and wise use will be the key to stretching this year's water supplies.

## SNOWPACK

Record or near record low snow water content levels are occurring at numerous sites throughout Idaho. A new record is dependent upon the length and previous dry years included, such as 1977 or 1931. When snow sites are combined into a more comprehensive index to represent the basin, the analysis period may be shorter, but results are similar. Here are April 1 snow water content rankings for several basins and a few long-term individual sites:

<u>Basin</u>	<u>No. of Sites</u>	<u>Rank</u>	<u>Record Starts</u>	<u>Basin</u>	<u>No. of Sites</u>	<u>Rank</u>	<u>Record Starts</u>
Coeur d'Alene	2	1 <sup>st</sup>	1945	Little Wood	3	2 <sup>nd</sup>	1958
St. Joe	4	1 <sup>st</sup>	1961	Big Lost	4	3 <sup>rd</sup>	1957
Panhandle Region	8	1 <sup>st</sup>	1969	Little Lost	2	2 <sup>nd</sup>	1957
NF Clearwater	8	1 <sup>st</sup>	1961	Henrys Fork	7	2 <sup>nd</sup>	1940
Clearwater	14	1 <sup>st</sup>	1961	Snake abv Jackson	4	2 <sup>nd</sup>	1940
MF Salmon	3	2 <sup>nd</sup>	1963	Snake abv Heise	17	2 <sup>nd</sup>	1961
Salmon	17	2 <sup>nd</sup>	1963	Oakley	3	4 <sup>th</sup>	1949
Weiser	3	1 <sup>st</sup>	1961	Salmon Falls	4	7 <sup>th</sup>	1955
Payette	9	2 <sup>nd</sup>	1961	Bruneau	4	7 <sup>th</sup>	1961
Boise	7	2 <sup>nd</sup>	1961	Owyhee	6	5 <sup>th</sup>	1959
Big Wood	6	2 <sup>nd</sup>	1961	Bear River	15	3 <sup>rd</sup>	1961

<u>Individual Sites</u>	<u>Location</u>	<u>Rank</u>	<u>Record Starts</u>
Smith Creek	Bonnors Ferry	1 <sup>st</sup>	1938
Deadwood Summit	Deadwood Dam	2 <sup>nd</sup>	1936
Lewis Lake Divide	Yellowstone NP	3 <sup>rd</sup>	1919 *

\*Only years 1977 and 1931 had less snow. For the 11-year period from 1919-1930, the April 1 values were estimated from the March 15 and April 15 measurement.

Snow indexes and historic snow data can be viewed at: <http://idsnow.id.nrcs.usda.gov/snow/mss.htm>

Low elevation and valley snowpacks have melted after a long and colder-than-normal winter in the valley. Many snow surveyors commented that the April 1 conditions look more typical of the conditions experienced on May 1. Therefore it may be difficult to access sites on May 1 to make measurements. Mid- to high elevation SNOTEL sites are not melting yet, but the snowpack is ripe and ready to melt. Once daily melt rates are in the 0.5 to 1.2 inches range per day, it won't take long to deplete snowpacks that only have 10-20 inches of water in the snow. A cool wet spring, April-May-June, would delay the onset of snowmelt, provide much needed additional water, delay initial irrigation demand, and provide additional soil moisture. A dry spring and summer like last year will only tax the system even more and could possibly set the stage for another severe fire season.

## PRECIPITATION

March precipitation ranged from 50-90% of average across the state. Lowest amounts were 50-55% of average in the Wood and Lost Basin, Upper Snake and Bear River basins. The Southside Snake River basins received the most, 89% of average, followed by the Clearwater basin which received 79% of its normal March amount. Water year to date totals range from half of normal in the Panhandle Region to 72% in the Southside Snake River basins.

## RESERVOIRS

Water storage facilities are starting to show a little activity in terms of increasing in storage. Avista, which operates Coeur d'Alene Lake, is taking control of the lake and starting to fill it to ensure that it does fill. Coeur d'Alene and Pend Oreille lakes are now about 50% of normal summer levels. Priest Lake is 40% of its summer level but all are expected to reach their normal levels. Idaho's other major reservoirs or systems are not expected to fill this year. The Owyhee River peaked on March 22 and the reservoir increased to 59% of capacity, up from 41% last month. This may be the peak storage once irrigation demand starts. The Boise and Payette reservoir systems are 61% of capacity. Magic and Oakley reservoirs are about 35% full. Salmon Falls Reservoir remains the lowest at only 14% of capacity. Bear Lake and Mackay Reservoir are 63% full. Little Wood reservoir and the 8 major reservoirs in the Upper Snake system are 77% full. American Falls Reservoir is currently full, but it will not refill with Palisades Reservoir at only 55% of full. Brownlee Reservoir is 97% of capacity, but the projected inflow to Hell's Canyon Dam is only 33% of average. Reservoirs will be drafted early as a result of the dismal inflows and will be at their minimum storage levels by summer's end.

Note: NRCS reports reservoir information in terms of usable volumes, which includes both active, inactive and in some cases dead storage. Other operators may report reservoir contents in different terms. For additional information, see the reservoir definitions in this report.

## STREAMFLOW

Streamflow forecasts decreased from last month as a result of below normal March precipitation. Streamflow forecasts now range from 18-68% across the state. The lowest forecasts call for 20-40% of average in the Weiser, Payette, Boise, Hells Canyon, Big and Little Wood, Bear and American Falls drainages. Some are near record low runoff levels. The lack of moisture this winter has also resulted in some unregulated streams flowing near their minimum winter levels, especially in northern Idaho. March snowmelt generated rises in some streams, but most are still below normal levels. Many streams may also be near their minimum levels by mid-to late summer. Irrigation shortages are expected across most of southern Idaho. The extent of shortages will vary and depends on water rights and source. Natural streamflow users should prepare for well below normal runoff volumes, as low streamflow levels will occur much earlier due to near record low snow levels. Irrigators should maintain close contact with local irrigation districts for more specific details. Conservation and wise use will be the keys for stretching water supplies as far as possible this year.

## RECREATION

River runners should be ready to hit streams when the rest of the snowpack starts melting. The Owyhee River near Rome peaked on March 22 at about 8,000 cfs; remaining snowpack is only 36% of average. Snowpacks are at or near record low levels across the northern 2/3s of the state. River runners should be prepared for well below normal streamflow volumes, peaks, and length of high flow season - as there will basically be none. Streams will return to low summer baseflow levels much earlier than normal, especially on the tributaries. However, this also means a longer season on the main Salmon River due to the lack of high water. The main Payette River will also see a longer season as a result of steady releases from Cascade Reservoir after the natural stream levels subside. Reservoir recreationists will see reservoirs not fill this year and early drawdown due to dismal inflows.

**IDAHO SURFACE WATER SUPPLY INDEX (SWSI) As of April 1, 2001**

The Surface Water Supply Index (SWSI) is a predictive indicator of surface water availability within a watershed for the spring and summer water use season. The index is calculated by combining pre-runoff reservoir storage (carryover) with forecasts of spring and summer streamflow. SWSI values are scaled from +4.1 (abundant supply) to -4.1 (extremely dry), with a value of zero indicating a median water supply as compared to historical occurrences.

SWSI values are published January through May and provide a more comprehensive outlook of water availability than either streamflow forecasts or reservoir storage figures alone. The SWSI index allows comparison of water availability between basins for drought or flood severity analysis. Threshold SWSI values have been established for most basins to indicate the potential for agricultural water shortages.

The following agencies and cooperators provide assistance in the preparation of the Surface Water Supply Index for Idaho:

US National Weather Service  
US Bureau of Reclamation  
Idaho Water Users Association

US Army Corps of Engineers  
Idaho Dept. of Water Resources  
PacifiCorp

<i>BASIN or REGION</i>	<i>SWSI Value</i>	<i>Most Recent Year With Similar SWSI Value</i>	<i>Agricultural Water Supply Shortage May Occur When SWSI is Less Than</i>
PANHANDLE	-3.5	1994	NA
CLEARWATER	-3.5	1977	NA
SALMON	-3.5	1994	NA
WEISER	-3.8	1977/92	NA
PAYETTE	-3.8	1977/92	NA
BOISE	-3.2	1987/91	-2.6
BIG WOOD	-3.2	1977/94	-1.4
LITTLE WOOD	-2.4	1991	-2.1
BIG LOST	-2.6	1990	-0.8
LITTLE LOST	-2.7	1977/88	0.0
HENRYS FORK	-3.2	1988/92	-3.3
SNAKE (AMERICAN FALLS)	-2.5	1987/94	-2.0
OAKLEY	-1.3	1989	0.0
SALMON FALLS	-2.6	1990/91	0.0
BRUNEAU	-1.9	1991	NA
OWYHEE	-1.1	1994	NA
BEAR RIVER	-2.4	1989	-3.8

**SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION**

-4	-3	-2	-1	0	1	2	3	4
-----	-----	-----	-----	-----	-----	-----	-----	
99%	87%	75%	63%	50%	37%	25%	13%	1%
Much	Below			Near Normal		Above		Much
Below	Normal			Water Supply		Normal		Above

Note: The Percent Chance of Exceedance is an indicator of how often a range of SWSI values might be expected to occur. Each SWSI unit represents about 12% of the historical occurrences. As an example of interpreting the above scale, the SWSI can be expected to be greater than -3.0, 87% of the time and less than -3.0, 13% of the time. Half the time, the SWSI will be below and half the time above a value of zero. The interval between -1.5 and +1.5 described as "Near Normal Water Supply," represents three SWSI units and would be expected to occur about one-third (36%) of the time.

## NRCS offers practical tips for stretching short water supplies

The water supply outlook for farmers and ranchers this spring is well below normal for many streams across Idaho. The Natural Resources Conservation Service, who conducts snow surveys and prepares water supply forecasts, advises farmers and ranchers to keep in close contact with their irrigation districts, reservoir managers and others who monitor and regulate water supplies for estimates of water available for use this spring and summer.

NRCS State Conservationist Rich Sims said farmers and ranchers need to find out as soon as possible whether they will have a little water all season or more in the spring and none later on—and to adjust the type of crops they plant accordingly. For example, alfalfa, corn, and sugar beets need water all season. Wheat and barley need water early in the season.

Sims advises farmers to hold off on planting crops until the soil is warm enough for rapid and complete seed germination. Farmers who decide to plant fewer acres should consider planting drought-tolerant cover crops on unplanted fields to provide protection from wind erosion.

More ideas for stretching low water supplies, targeted to irrigated farmers, dryland farmers, and ranchers include:

### Irrigated farmers

The threat of water shortages means that many irrigators will have to make some difficult pre-planting decisions. They may need to adjust the acres and types of crops they normally plant, based on available water supplies. Despite a water short year, they can still get good crop yields by improving irrigation water management.

- Know your soil type. This is your guide to rate and frequency of irrigation. Know precisely how fast your soil can accept water and its total water-holding capacity to help you decide how much water to apply at a given time.
- If you have a conservation plan for your farm, or if the soil in your area has been mapped, NRCS can crosscheck soil type and irrigation data and provide you with the water-holding capacity of your soil for a given crop.
- Check your irrigation system carefully and often to keep equipment in top shape and running efficiently. Make certain ditches are cleared of water-wasting weeds or debris that slow delivery.

### Dryland farmers

Valley precipitation totals are below normal, so soil moisture levels will be low.

- Crop residue management is the best protection. Farmers who have left crop residues on the soil surface will have the benefits of improved soil moisture from mulching effects, increased water absorption, and reduced surface runoff.
- Operate tillage tools at shallower depths.
- Delay spring tillage until absolutely essential to help conserve soil moisture.
- Over-tillage will destroy residues and dry out the soil.

### Ranchers

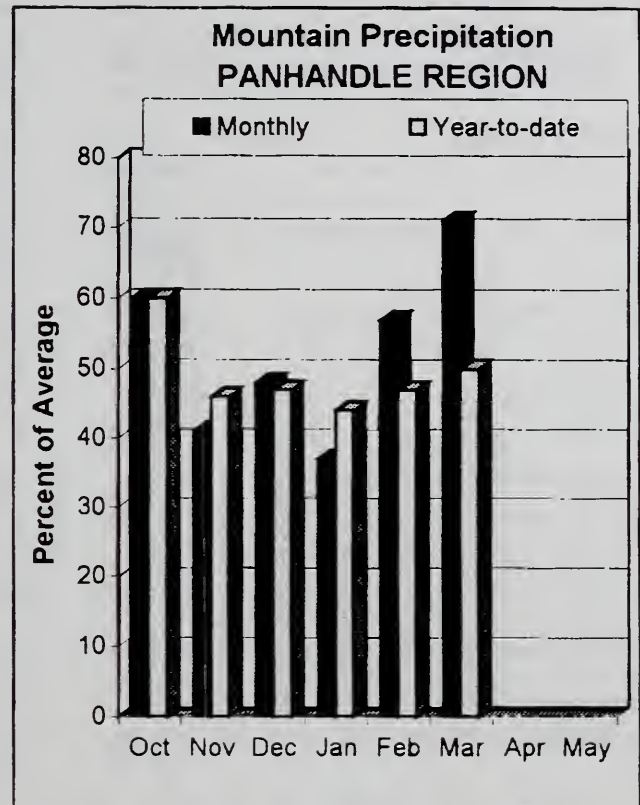
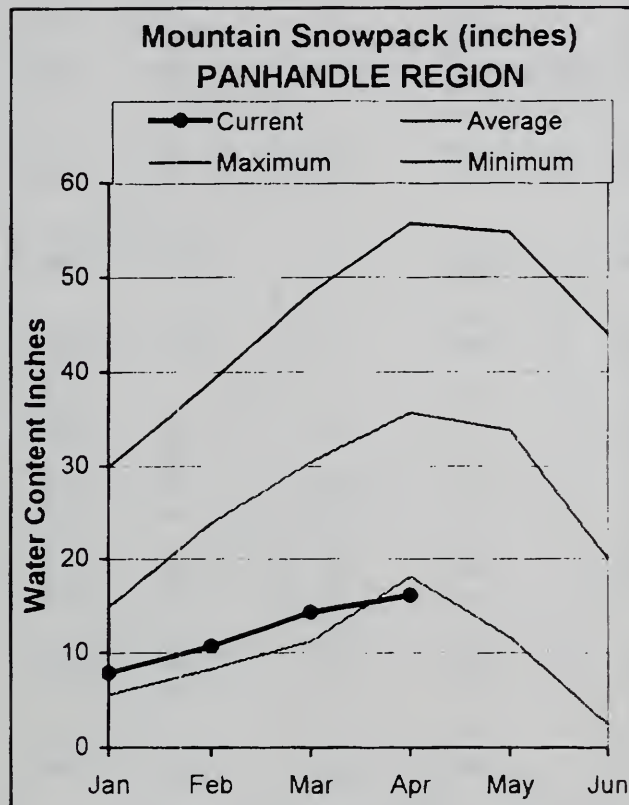
More than cropland will be affected by short water supplies. Moisture could be extremely low for rangeland and pasture too. Ranchers can take a number of actions to avoid overgrazing and long-term damage to forage in a water short year.

- Consider adjusting livestock numbers to balance with forage supplies. Cull herds more than normal. Sell calves and lambs early.
- Determine forage needs and plan to buy needed supplements early.
- Grow small grain for use as hay or pasture, since grain requires less water than conventional forage crops.
- Keep springs, stock tanks, float valves, and pipelines in top shape to help conserve water.
- If you have irrigated pasture, use rotation grazing, leaving four to six inches of top growth at the end of each grazing period, and apply irrigation water in the right amount at the right time.

Call or visit your local NRCS office for a free leaflet with more ideas for stretching short water supplies, or visit the NRCS Idaho website at <http://id.nrcs.usda.gov> to download and print a copy.

# PANHANDLE REGION

## APRIL 1, 2001



## WATER SUPPLY OUTLOOK

Snow water content levels are at record low levels. A 4-station snow index for the St. Joe basin is the lowest since measurements started in 1961; a 2-station snow index for Coeur d'Alene basin is the lowest since measurements started in 1945. Smith Creek, a long-term snow course located about 25 miles northwest of Bonners Ferry, is the lowest since records started in 1938. Overall, the Panhandle snowpack is 45% of average and about half of what it was last year at this time. March precipitation was 71% of average, the highest monthly amount this water year! Water year to date precipitation is the lowest in the state at half of normal. Streamflow forecasts call for only 48-55% of average flow. Avista is now starting to refill Coeur d'Alene Lake to ensure it fills this summer. Coeur d'Alene Lake was low all winter due to the lack of rain. It is now half of its normal summer level. Pend Oreille and Priest lakes are slightly below half of their summer levels and are expected to fill to their normal levels even with the dismal inflows. End result: Less water coming into these storage systems means less water flowing out. Streamflows will be much below normal on regulated and unregulated streams for the rest of this water year.

PANHANDLE REGION  
Streamflow Forecasts - April 1, 2001

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
KOOTENAI at Leonia (1,2)	APR-JUL	3346	3563	3710	52	3993	4617	7199
	APR-SEP	3850	4100	4270	52	4597	5316	8275
MOYIE RIVER at Eastport	APR-JUL	165	195	215	52	235	265	415
	APR-SEP	169	201	223	52	245	277	430
SMITH CREEK	APR-JUL	43	56	65	54	74	87	120
	APR-SEP	43	58	68	54	78	93	126
BOUNDARY CREEK	APR-JUL	43	56	64	54	72	85	119
	APR-SEP	45	58	67	54	76	89	125
CLARK FK at Whitehorse Rpds (1,2)	APR-JUL	3690	5347	6100	52	6853	8510	11730
	APR-SEP	4058	5882	6710	52	7538	9362	12910
PEND OREILLE Lake Inflow (2)	APR-JUL	4322	5542	6370	48	7198	8418	13150
	APR-SEP	4050	5783	6960	48	8137	9870	14370
PRIEST near Priest River (1,2)	APR-JUL	259	349	390	48	431	521	812
	APR-SEP	271	370	415	48	460	559	865
COEUR D'ALENE at Enaville	APR-JUL	263	349	408	53	467	553	769
	APR-SEP	274	364	425	53	486	576	809
ST. JOE at Calder	APR-JUL	447	550	620	53	690	793	1169
	APR-SEP	477	583	655	53	727	833	1237
SPOKANE near Post Falls (2)	APR-JUL	922	1201	1390	53	1579	1858	2627
	APR-SEP	942	1233	1430	53	1627	1918	2720
SPOKANE at Long Lake (2)	APR-JUL	1004	1341	1570	54	1799	2136	2905
	APR-SEP	1091	1448	1690	54	1932	2289	3128

PANHANDLE REGION Reservoir Storage (1000 AF) - End of March					PANHANDLE REGION Watershed Snowpack Analysis - April 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HUNGRY HORSE	3451.0	2983.0	2226.0	2046.0	Kootenai ab Bonners Ferry	39	54	51
FLATHEAD LAKE	1791.0	901.5	687.1	751.9	Moyie River	10	60	54
NOXON RAPIDS	335.0	306.2	323.4	231.3	Priest River	5	43	45
PEND OREILLE	1561.3	766.5	756.0	796.0	Pend Oreille River	109	62	57
COEUR D'ALENE	238.5	118.5	171.5	170.1	Rathdrum Creek	5	43	60
PRIEST LAKE	119.3	48.0	50.0	61.9	Hayden Lake	2	44	55
					Coeur d'Alene River	10	52	53
					St. Joe River	5	51	47
					Spokane River	19	49	53
					Palouse River	2	50	56

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

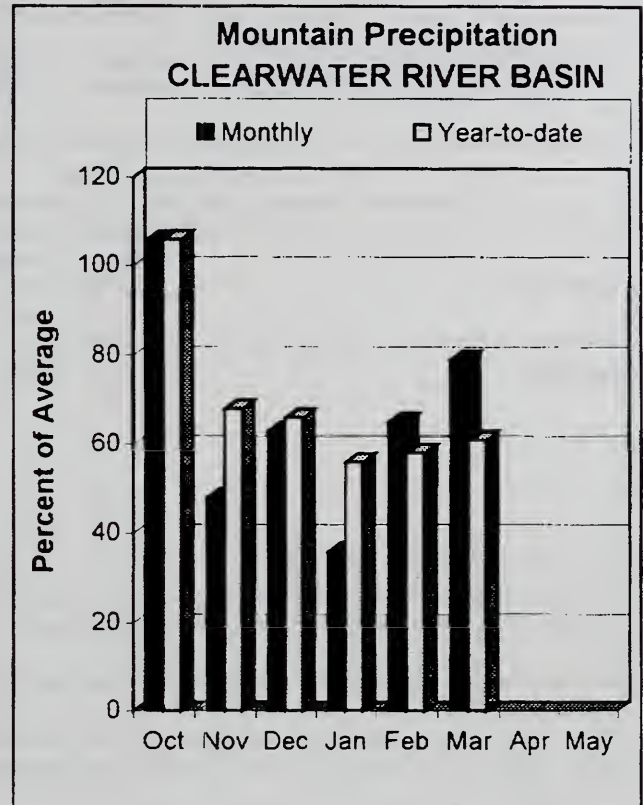
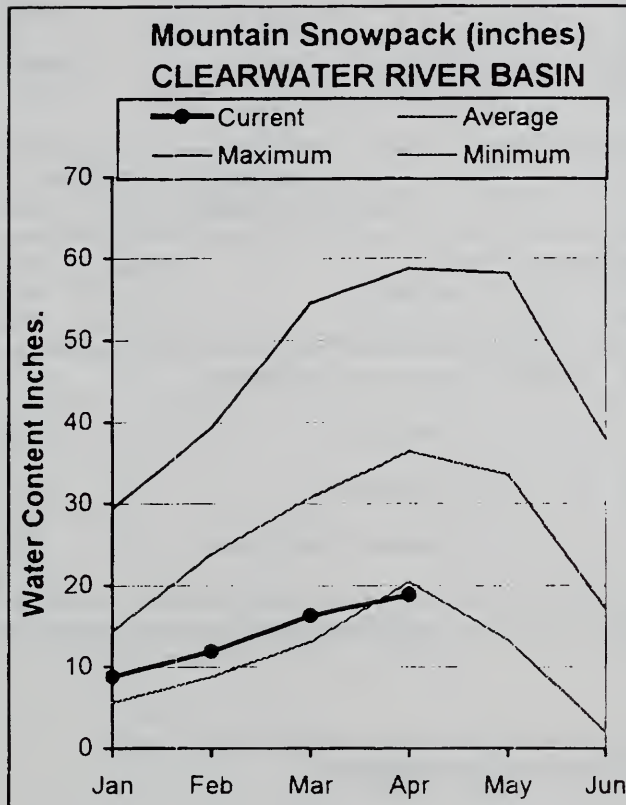
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# CLEARWATER RIVER BASIN

## APRIL 1, 2001



## WATER SUPPLY OUTLOOK

Snow water content levels are at a record low in the North Fork Clearwater basin. An 8-station snow index for the North Fork Clearwater River basin snowpack is the lowest since measurements started in 1961. A 4-station index for the Selway River is the third lowest since 1961; only years 1992 and 1981 had less snow. For the Clearwater basin as a whole, the snowpack is 52% of average, the lowest since 1961. March precipitation was 79% of average in this basin, the greatest monthly amount since normal precipitation fell in October. Water year to date totals are 61% of average. Current storage in Dworshak Reservoir is up 2 percentage points from a month ago to 62% of capacity. Dworshak Reservoir inflow forecast calls for 52% of average. Dworshak Reservoir is not expected to refill this year; maximum storage level will depend upon timing of the runoff and releases. Clearwater River at Spalding is forecast at 52% of average, about 4.2 million acre-feet, for the April-September period. This is 100,000 more than observed flow in 1977, another extremely low year. Water users should be prepared for well below normal streamflow volumes, peaks, and length of high flow season - as there will basically be none. Streams will return to low summer baseflow levels much earlier than normal.

CLEARWATER RIVER BASIN  
Streamflow Forecasts - April 1, 2001

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
		=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
DWRSHAK RESV INFLOW (1,2)	APR-JUL	842	1226	1400	52	1574	1958	2687
	APR-SEP	941	1336	1515	53	1694	2089	2858
CLEARWATER at Orofino (1)	APR-JUL	1886	2425	2670	57	2915	3454	4729
	APR-SEP	2298	2877	3140	63	3403	3982	4990
CLEARWATER at Spalding (1,2)	APR-JUL	2481	3443	3880	51	4317	5279	7618
	APR-SEP	2725	3732	4190	52	4648	5655	8051

CLEARWATER RIVER BASIN Reservoir Storage (1000 AF) - End of March					CLEARWATER RIVER BASIN Watershed Snowpack Analysis - April 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DWRSHAK	3468.0	2139.9	2266.8	2093.0	North Fork Clearwater	9	51	51
					Lochsa River	4	49	46
					Selway River	6	58	56
					Clearwater Basin Total	19	53	52

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

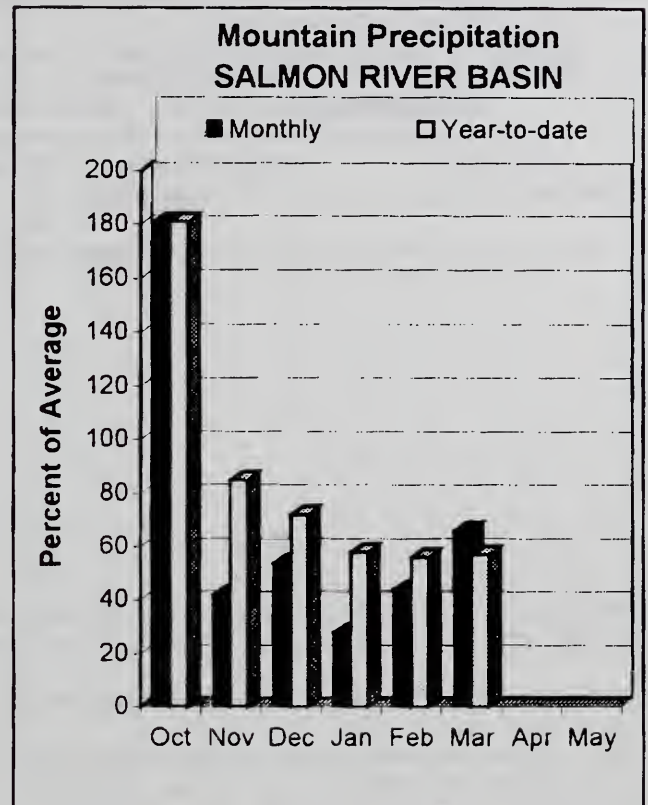
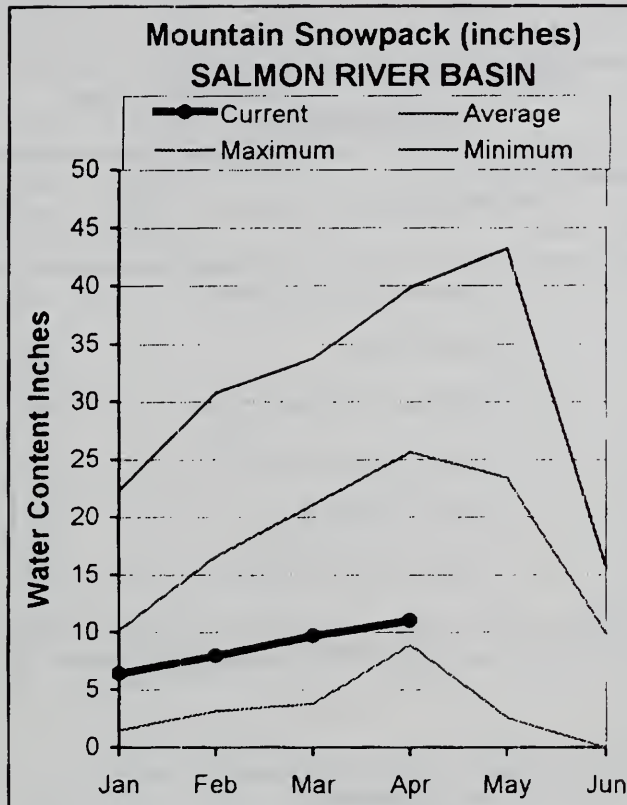
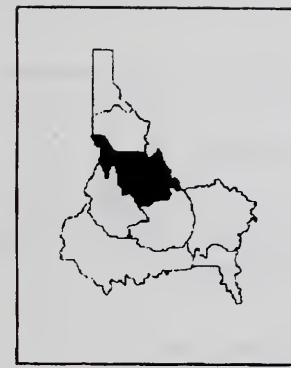
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# SALMON RIVER BASIN

## APRIL 1, 2001



## WATER SUPPLY OUTLOOK

The Salmon River basin snowpack is the 2<sup>nd</sup> lowest since records started in 1961; only 1977 had less snow than this year. The snowpack ranges from 37% of average in the Little Salmon and South Fork Salmon basins to 58% in the Lemhi basin. The Middle Fork Salmon basin is 40% of average, also the 2<sup>nd</sup> lowest since 1961. Overall, the Salmon basin snowpack is 47% of average. In 1977, the snowpack was 35% of average. March precipitation was 66% of average, the highest since October when 180% of average precipitation fell to put out the fires. Water year to date precipitation is only 57% of average, similar to 1994 levels. Streamflow forecasts decreased from last month and now call for 43% of average for the Salmon River at Salmon. The April-September streamflow forecast for the Salmon River at White Bird calls for 51% of average, 3,348,000 acre-feet. The observed runoff in 1994 was 3,221,000 acre-feet. River runners can expect to see the main Salmon River at levels similar to other low runoff years of 1977, 1987, 1992 and 1994. In 1994, the Middle Fork Salmon River peaked at 4.5 feet in early May and was at 2.0 feet by early July. Banner Summit SNOTEL site peaked at 16 inches of snow water in mid-April 1994. Currently, there are 11.3 inches at Banner Summit. Typically, the Middle Fork Salmon River peaks when Banner Summit is half melted, so river runners should be ready to go because it won't take too many warm days to melt this year's meager snowpack.

SALMON RIVER BASIN  
Streamflow Forecasts - April 1, 2001

Forecast Point	Forecast Period	<===== Drier ===== Future Conditions ===== Wetter =====>						30-Yr Avg. (1000AF)
		===== Chance Of Exceeding * =====						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
SALMON at Salmon (1)	APR-JUL	207	323	375	43	427	543	869
	APR-SEP	253	382	440	43	498	627	1019
SALMON at White Bird (1)	APR-JUL	1975	2749	3100	52	3451	4225	5956
	APR-SEP	2099	2958	3348	51	3738	4597	6602

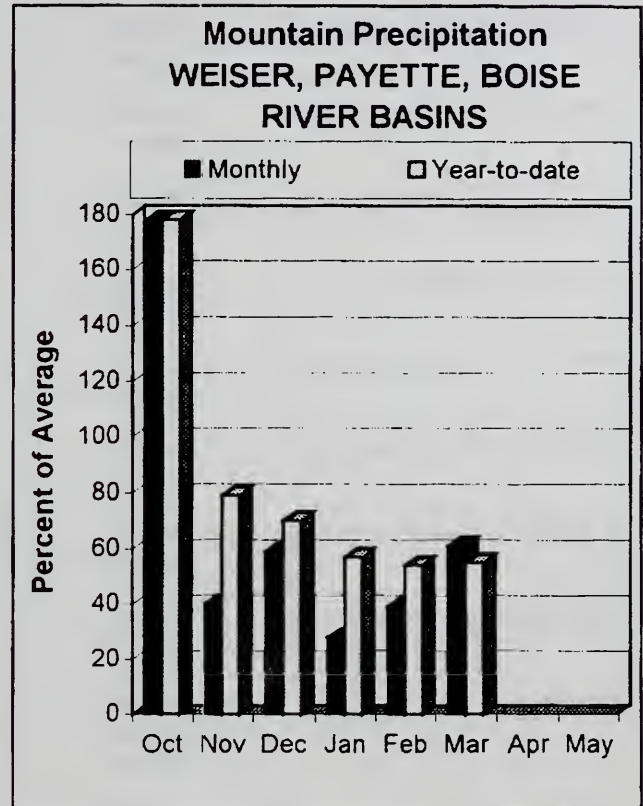
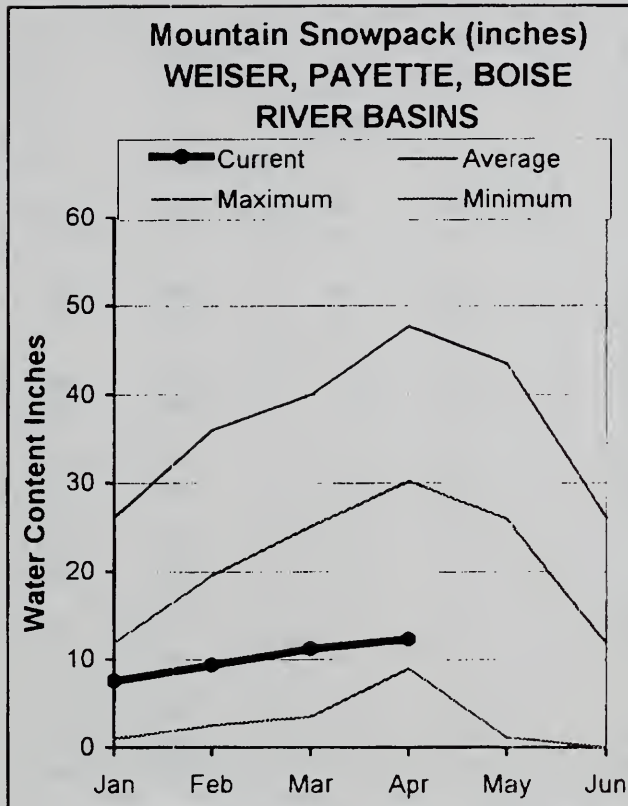
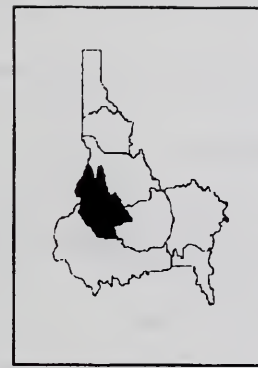
SALMON RIVER BASIN Reservoir Storage (1000 AF) - End of March					SALMON RIVER BASIN Watershed Snowpack Analysis - April 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					Salmon River ab Salmon	10	56	48
					Lemhi River	9	70	58
					Middle Fork Salmon River	3	48	40
					South Fork Salmon River	3	44	38
					Little Salmon River	4	41	37
					Salmon Basin Total	30	55	47

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

# WEISER, PAYETTE, BOISE RIVER BASINS APRIL 1, 2001



## WATER SUPPLY OUTLOOK

The Weiser basin snowpack, based on 3-staion index, is at the lowest April 1 level since records started in 1961. The Payette and Boise basin snowpack is the 2<sup>nd</sup> lowest since 1961. Deadwood Summit SNOTEL site, located 20 miles north of Deadwood Reservoir in the headwaters of the South Fork Salmon, Middle Fork Salmon and Deadwood rivers, has 17.3 inches of snow water. This is the 2<sup>nd</sup> lowest since measurements started in 1936. The record low was 7.4 inches in 1977. The 3<sup>rd</sup> lowest year was 23.4 inches in 1994. March precipitation ranged from 45-85% of average across these west-central basins. Water year to date precipitation is only 55% of average. The Boise and Payette reservoir systems are 61% of capacity and will not fill this year. Mann Creek Reservoir increased from 19% of capacity a month ago to 48% as a result of the low elevation runoff. Reservoirs will be drafted earlier than normal and will be empty by summer's end, if not before. Streamflow forecasts decreased from a month ago and now call for 31% for the Payette River at Horseshoe Bend and 38% for the Boise River near Boise. Water shortages will occur, depending on your water right and water source. Natural streamflow users should prepare for well below normal runoff volumes as low baseflow levels will occur much earlier due to near record low snow levels. Irrigators should stay in contact with their local irrigation districts for more specific details.

WEISER, PAYETTE, BOISE RIVER BASINS  
Streamflow Forecasts - April 1, 2001

Forecast Point	Forecast Period	<<==== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		===== Chance Of Exceeding * =====						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
WEISER near Weiser (1)	APR-SEP	4.0	48	102	25	156	275	415
SF PAYETTE at Lowman	APR-JUL	152	188	212	49	236	272	432
	APR-SEP	172	213	240	49	267	308	488
DEADWOOD RESERVOIR Inflow (1,2)	APR-JUL	31	47	54	40	61	77	135
	APR-SEP	34	51	58	41	65	82	143
LAKE FORK PAYETTE near McCall	APR-JUL	28	36	41	49	46	53	84
	APR-SEP	30	37	42	48	48	55	88
NF PAYETTE nr Cascade (1,2)	APR-JUL	51	131	167	34	203	283	496
	APR-SEP	53	140	179	34	218	305	533
NF PAYETTE nr Banks (2)	APR-JUL	77	153	204	32	255	331	648
	APR-SEP	89	172	228	33	284	367	690
PAYETTE nr Horseshoe Bend (1,2)	APR-JUL	197	405	500	31	595	803	1618
	APR-SEP	210	441	545	31	649	880	1755
BOISE near Twin Springs (1)	APR-JUL	169	238	270	43	302	371	631
	APR-SEP	193	269	303	44	337	413	686
SF BOISE at Anderson Ranch Dam (1,2)	APR-JUL	116	174	200	37	226	284	544
	APR-SEP	132	193	221	38	249	310	582
MORES CREEK near Arrowrock Dam	APR-JUL	37	52	63	49	74	89	129
	APR-SEP	39	55	66	49	77	93	134
BOISE near Boise (1,2)	APR-JUN	333	448	500	40	552	667	1264
	APR-JUL	315	466	535	38	604	755	1421
	APR-SEP	365	527	600	39	673	835	1535

WEISER, PAYETTE, BOISE RIVER BASINS  
Reservoir Storage (1000 AF) - End of March

WEISER, PAYETTE, BOISE RIVER BASINS  
Watershed Snowpack Analysis - April 1, 2001

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
MANN CREEK	11.1	5.3	10.8	8.4	Mann Creek	2	50	47
CASCADE	693.2	434.9	510.7	392.5	Weiser River	5	45	41
DEADWOOD	161.9	95.4	121.3	90.4	North Fork Payette	8	43	39
ANDERSON RANCH	450.2	284.9	332.5	276.2	South Fork Payette	5	51	40
ARROWROCK	272.2	175.5	257.4	222.2	Payette Basin Total	14	46	41
LUCKY PEAK	293.2	159.0	211.7	156.1	Middle & North Fork Boise	6	51	45
LAKE LOWELL (DEER FLAT)	165.2	95.2	112.4	140.8	South Fork Boise River	9	49	42
					Mores Creek	5	53	49
					Boise Basin Total	16	49	43
					Canyon Creek	2	37	32

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

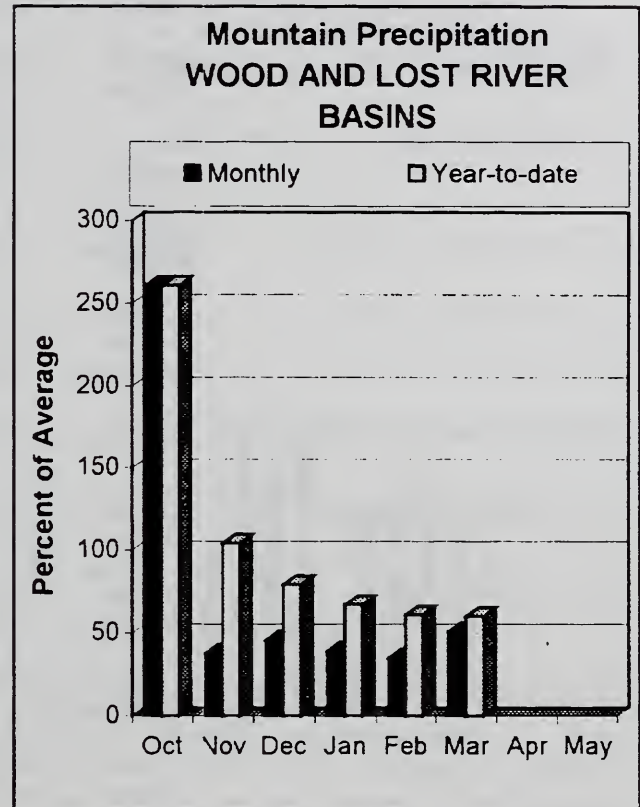
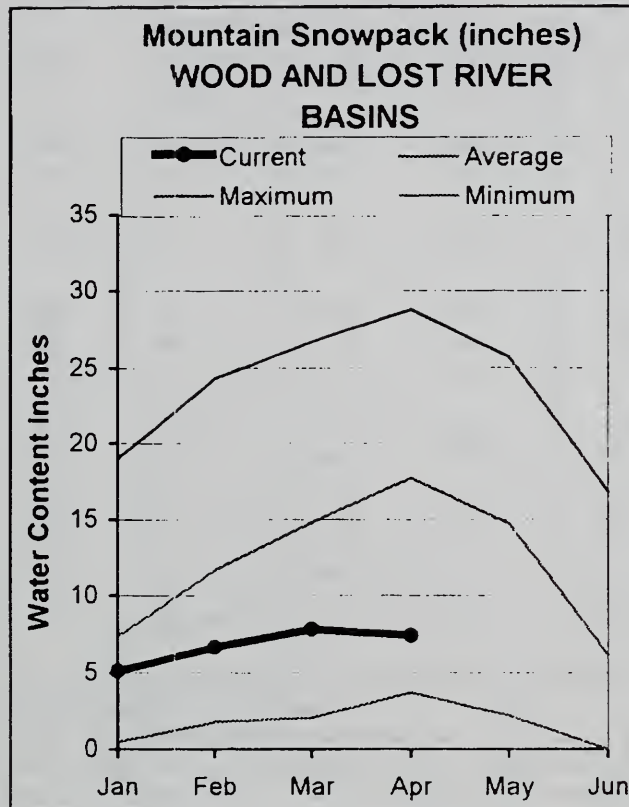
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# WOOD and LOST RIVER BASINS

## APRIL 1, 2001



## WATER SUPPLY OUTLOOK

The snowpack in these central Idaho basins is about 41% of average. Individual sites are at or near record low. A Big Wood basin snow index is the 2<sup>nd</sup> lowest since 1961; only 1977 had less snow while 1994 had slightly more. The Big Lost basin snow index is the 3<sup>rd</sup> lowest since 1957, only years 1977 and 1994 had less snow. Low elevation snow is melting about three weeks earlier than last year. The snowline elevation in the Big Lost basin is at about 6,500 feet in Antelope basin and about 7,700 feet in Copper basin. March precipitation was one of the lowest in the state at half of normal. Precipitation since October 1 is only 60% of average. One positive benefit for the Big Wood basin is that a soil moisture model indicates there is not a moisture deficit as a result of the wet October. This is also indicated by the November-January streamflow being near normal for the Big Wood River near Hailey even though monthly precipitation is well below normal this winter. Unfortunately there is not much snow to maintain these stream levels once the higher elevation snow starts melting. Streamflow forecasts call for 17-65% of average. Reservoir storage remains low with Magic Reservoir 34% full, Little Wood Reservoir at 77% full, and Mackay Reservoir 62% full. Water users should be prepared for short water supplies. The Surface Water Supply Index (SWSI) is below the agricultural water supply shortage threshold for the Big Wood, Little Wood, Big Lost and Little Lost basins. This year's water supply may be similar to that of 1977 or 1994. Normal or better precipitation this spring and summer is needed to stretch this year's meager amounts.

WOOD AND LOST RIVER BASINS  
Streamflow Forecasts - April 1, 2001

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		===== Chance Of Exceeding * =====						
		90% (1000AF)	70% (1000AF)	50% (Most Probable; (1000AF) (% AVG.))		30% (1000AF)	10% (1000AF)	
BIG WOOD at Hailey (1)	APR-JUL	55	84	99	39	115	155	255
	APR-SEP	64	96	113	39	131	177	289
BIG WOOD near Bellevue	APR-JUL	7.0	19.0	29	16	42	65	183
	APR-SEP	10.0	23	34	17	48	72	197
CAMAS CREEK near Blaine	APR-JUL	7.0	12.0	17.0	17	22	32	102
	APR-SEP	8.0	13.0	18.0	18	23	33	103
BIG WOOD below Magic Darr (2)	APR-JUL	3.0	18.0	53	18	88	139	295
	APR-SEP	3.0	17.0	53	17	89	143	310
LITTLE WOOD near Carey (2)	APR-JUL	17.4	26	35	38	44	56	92
	APR-SEP	17.6	29	38	38	47	61	99
BIG LOST at Howell Ranch	APR-JUN	48	65	76	54	87	104	141
	APR-JUL	56	79	94	52	109	132	181
	APR-SEP	65	90	108	52	126	151	206
BIG LOST below Mackay Reservoir (2)	APR-JUL	32	55	71	47	87	110	152
	APR-SEP	41	67	85	46	103	129	184
LITTLE LOST blw Wet Creek	APR-JUL	12.9	17.1	20	65	23	27	31
	APR-SEP	15.3	21	25	64	29	35	39
LITTLE LOST nr Howe	APR-JUL	15.7	18.8	21	64	23	26	33
	APR-SEP	19.7	24	27	63	30	34	43

WOOD AND LOST RIVER BASINS Reservoir Storage (1000 AF) - End of March					WOOD AND LOST RIVER BASINS Watershed Snowpack Analysis - April 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
MAGIC	191.5	65.4	137.7	113.2	Big Wood ab Magic	8	56	47
LITTLE WOOD	30.0	23.1	25.2	19.2	Camas Creek	5	23	22
MACKAY	44.4	27.5	35.4	33.1	Big Wood Basin Total	12	47	41
					Little Wood River	5	51	40
					Fish Creek	3	28	22
					Big Lost River	7	58	47
					Little Lost River	4	60	48
					Birch-Medicine Lodge Cree	4	65	63

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

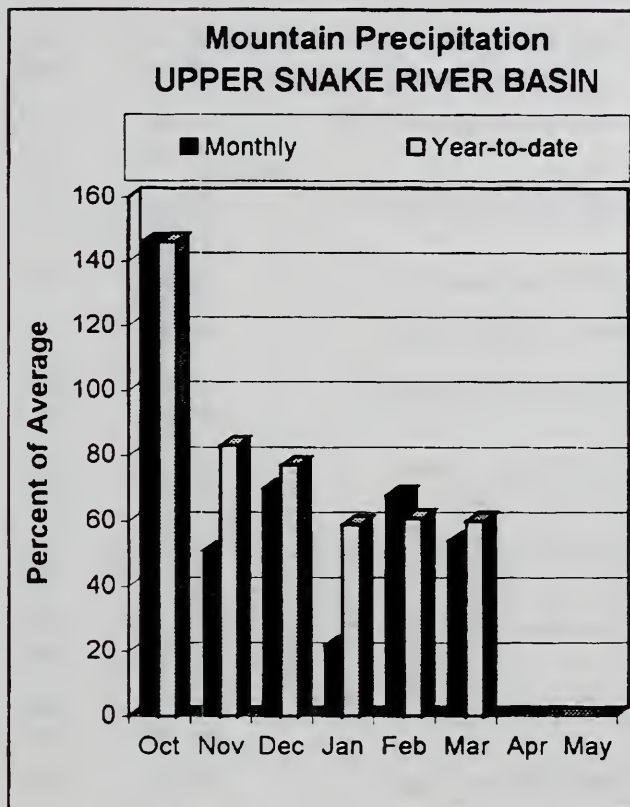
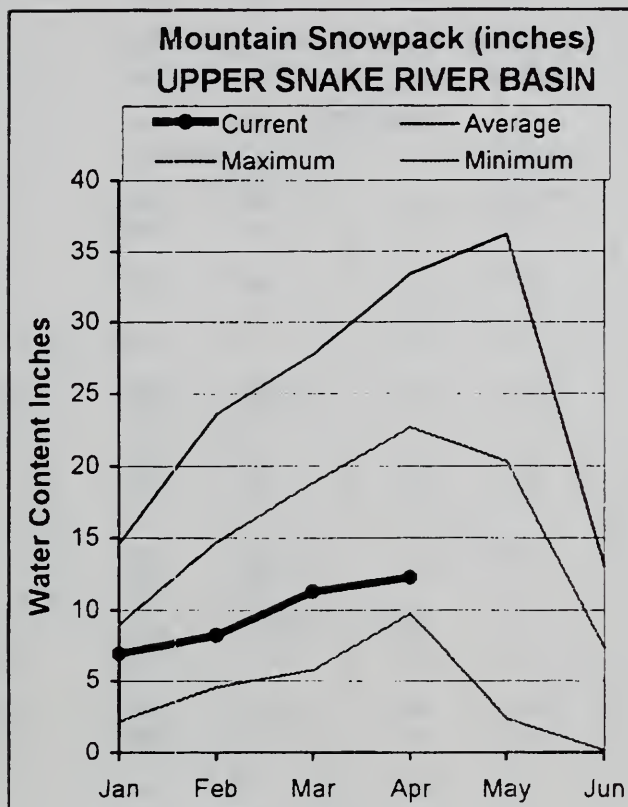
The average is computed for the 1961-1990 base period.

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(2) - The value is natural flow - actual flow may be affected by upstream water management.

# UPPER SNAKE RIVER BASIN

## APRIL 1, 2001



## WATER SUPPLY OUTLOOK

Snowpack ranges from 40% of average in the Blackfoot basin to 63% in the Gros Ventre basin in Wyoming. Overall, the snowpack is 54% of average for the Snake River above American Falls Reservoir. A 7-station snow index for the Henrys Fork shows the snowpack is the 2<sup>nd</sup> lowest since 1961, only 1977 had less snow. Similarly for the Snake basin above Jackson, a four-station index is the 2<sup>nd</sup> lowest since 1940. Lewis Lake Divide, a long-term site in Yellowstone NP, is the 3<sup>rd</sup> lowest since measurements started in 1919, only 1977 and 1931 had less snow. This analysis is based on estimation of the April 1 values from the March 15 and April 15 measurements for years 1919-1930. March precipitation was 54% of average in the upper Snake basin and is only 60% of average since the water year started October 1. Streamflow forecasts call for 60% of average for the Snake River near Heise and 61% of average for Henrys Fork. The 8 major reservoirs in the upper Snake system are 77% of capacity. Palisades Reservoir is only 55% full. The Upper Snake Reservoir system will not fill and will be depleted by the end of the season. Water shortages will occur but will not be wide spread and depends on water right and water source. Natural streamflow users should be prepared for well below normal runoff volumes as summer baseflow levels will occur much earlier due to near record low snow levels. Irrigators should stay in contact with their local irrigation districts for more specific details.

UPPER SNAKE RIVER BASIN  
Streamflow Forecasts - April 1, 2001

Forecast Point	Forecast Period	<==== Drier ==== Future Conditions ==== Wetter =====>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
HENRYS FORK near Ashton (2)	APR-JUL	289	334	365	67	396	441	544
	APR-SEP	393	448	485	66	522	577	730
HENRYS FORK near Rexburg (2)	APR-JUL	519	657	750	61	843	981	1228
	APR-SEP	676	833	940	61	1047	1204	1551
FALLS near Squirrel (1,2)	APR-JUL	178	224	245	67	266	312	364
	APR-SEP	228	274	295	68	316	362	432
TETON near Driggs	APR-JUL	70	90	104	68	118	138	152
	APR-SEP	93	118	135	68	152	177	199
TETON near St. Anthony	APR-JUL	172	220	252	67	284	332	377
	APR-SEP	214	268	305	67	342	396	457
SNAKE near Moran (1,2)	APR-SEP	399	496	540	62	584	681	869
PACIFIC CREEK at Moran	APR-SEP	68	86	98	59	110	128	166
SNAKE above Palisades (2)	APR-JUL	1258	1390	1480	64	1570	1702	2311
	APR-SEP	1439	1600	1710	64	1820	1981	2671
GREYS above Palisades	APR-JUL	125	154	173	52	192	221	333
	APR-SEP	143	175	197	51	219	251	388
SALT near Etna	APR-JUL	89	129	156	49	183	223	319
	APR-SEP	113	160	191	48	222	269	399
PALISADES RESERVOIR INFLOW (1,2)	APR-JUL	1488	1813	1960	61	2107	2432	3226
	APR-SEP	1669	2041	2210	59	2379	2751	3763
SNAKE near Heise (2)	APR-JUL	1666	1906	2070	60	2234	2474	3451
	APR-SEP	1910	2190	2380	59	2570	2850	4049
BLACKFOOT RESV INFLOW	APR-JUN	20	40	54	48	68	88	113
SNAKE nr Blackfoot (1,2)	APR-JUL	1653	2318	2620	59	2922	3587	4444
	APR-SEP	2112	2846	3180	58	3514	4248	5482
PORTNEUF at Topaz	APR-JUL	23	32	37	52	43	52	72
	APR-SEP	35	44	51	55	58	67	93
AMERICAN FALLS RESV INFLOW (1,2)	APR-JUL	31	663	1000	33	1337	2078	3066
	APR-SEP	33	712	1110	34	1508	2385	3303

UPPER SNAKE RIVER BASIN  
Reservoir Storage (1000 AF) - End of March

UPPER SNAKE RIVER BASIN  
Watershed Snowpack Analysis - April 1, 2001

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HENRYS LAKE	90.4	87.6	87.7	80.3	Camas-Beaver Creeks	4	59	45
ISLAND PARK	135.2	118.8	114.7	118.7	Henrys Fork-Falls River	12	57	50
GRASSY LAKE	15.2	12.9	12.7	11.2	Teton River	8	69	60
JACKSON LAKE	847.0	641.2	657.4	473.2	Henrys Fork above Rexburg	20	62	54
PALISADES	1400.0	773.0	1188.8	1014.0	Snake above Jackson Lake	9	59	52
RIRIE	80.5	47.1	50.0	39.5	Gros Ventre River	3	76	63
BLACKFOOT	348.7	220.3	284.0	245.3	Hoback River	6	73	60
AMERICAN FALLS	1672.6	1650.5	1647.6	1462.0	Greys River	4	64	58
					Salt River	5	59	56
					Snake above Palisades	29	63	55
					Willow Creek	6	55	53
					Blackfoot River	5	44	40
					Portneuf River	6	52	47
					Snake abv American Falls	43	60	54

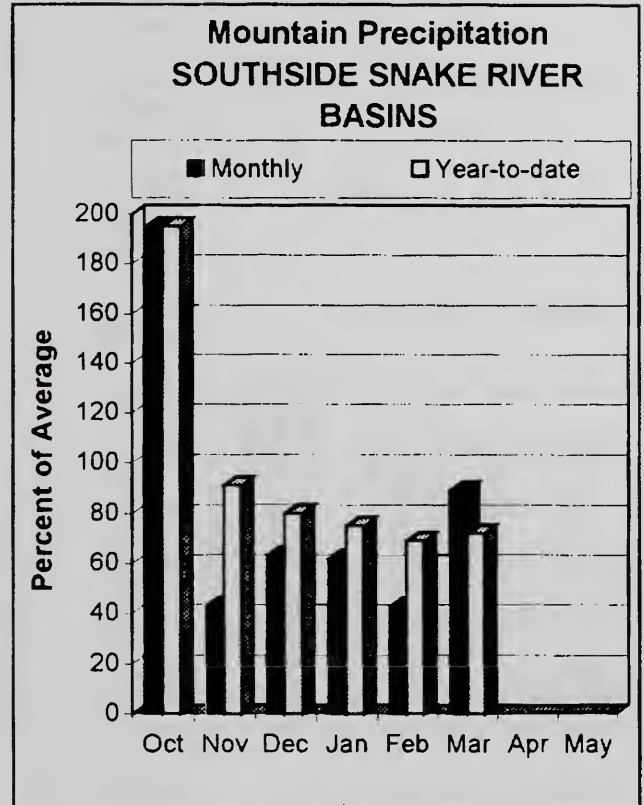
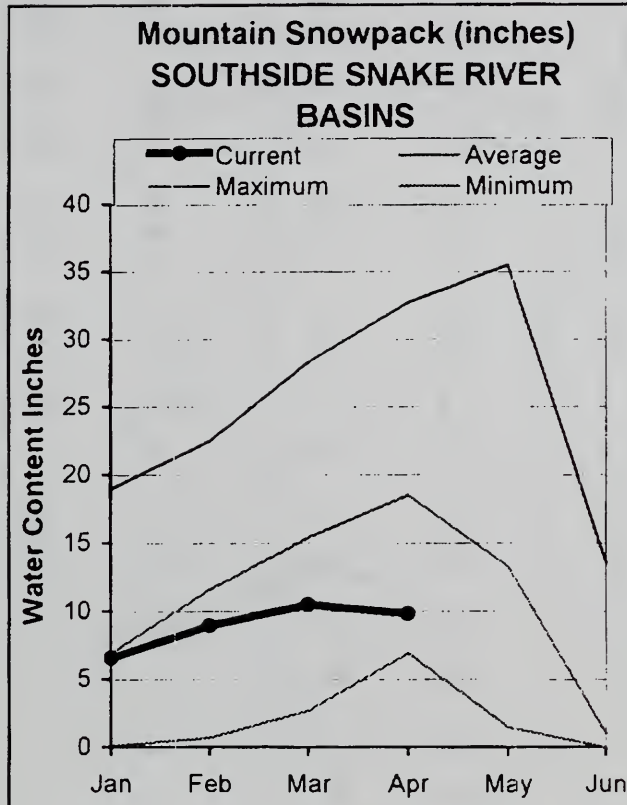
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# SOUTHSIDE SNAKE RIVER BASINS APRIL 1, 2001



## WATER SUPPLY OUTLOOK

After receiving the lowest precipitation in the state (43% of average in February), March precipitation was the highest in the state at 89% of average. A few stations along the Idaho/Nevada border even reported above normal precipitation. Water year to date precipitation is the highest in the state at 72% of average. These high desert basins hosted the highest snowpacks in the state earlier this winter but now are melting and range from 50-55% of average for the Bruneau, Salmon Falls, and Oakley basins. The warm temperatures in March melted the low elevation snowpack in the Owyhee basin. The Owyhee River near Rome, Oregon, peaked on March 22 at about 8,000 cfs, higher than expected because of the low elevation snow. The remaining snowpack is only 36% of average. The Oakley basin snowpack is the 4<sup>th</sup> lowest since 1950, while Salmon Falls and Bruneau basins are about the 7<sup>th</sup> lowest. Reservoir storage remains critically low in Salmon Falls Reservoir at only 14% of capacity. Oakley Reservoir storage is 39% full. Owyhee and Wildhorse reservoirs are about half full. Brownlee Reservoir is 97% full but the Hells Canyon Dam streamflow forecast calls for only 33% of average runoff for the April 1-July 31 period. Irrigators should be prepared for shortages; irrigation allotments may be around half their long-term averages for the Salmon Falls Tract users. Shortages are also expected for Oakley Reservoir irrigators and instream users. River runners should be ready to go if the Bruneau River reaches a floatable level, because there is very little snow to sustain the runoff for more than few days unless rain occurs. Low streamflow levels will occur for the remaining summer months.

SOUTHSIDE SNAKE RIVER BASINS  
Streamflow Forecasts - April 1, 2001

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		===== Chance Of Exceeding * =====						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
OAKLEY RESV INFLOW	APR-JUL	5.8	8.7	11.0	40	13.6	17.8	28
	APR-SEP	6.8	9.9	12.4	40	15.1	19.6	31
OAKLEY RESV STORAGE	APR-30	26	28	29	77	31	32	38
	MAY-31	20	24	26	65	29	33	41
	JUN-30	11.9	17.5	21	58	25	31	37
SALMON FALLS CREEK nr San Jacinto	APR-JUN	19.2	28	34	46	41	53	74
	APR-JUL	20	29	37	46	44	57	79
	APR-SEP	23	33	40	48	48	62	84
SALMON FALLS RESV STORAGE	APR-30	22	26	29	36	32	37	83
	MAY-31	24	33	38	41	44	52	93
	JUN-30	23	36	45	51	54	67	89
BRUNEAU near Hot Springs	APR-JUL	72	101	123	59	147	187	209
	APR-SEP	77	107	130	59	155	197	221
OWYHEE near Gold Creek (2)	APR-JUL	3.0	6.2	9.0	36	12.4	18.3	25
OWYHEE nr Owyhee (2)	APR-JUL	0.9	12.2	26	30	40	60	86
OWYHEE near Rome	APR-JUL	44	77	104	28	135	189	377
OWYHEE RESV INFLOW (2)	APR-JUL	50	82	109	28	139	191	390
SUCCOR CK nr Jordan Valley	APR-JUL	0.10	1.42	4.00	42	6.58	10.38	9.60
SNAKE RIVER at King Hill (1,2)	APR-JUL			1710	59			2896
SNAKE RIVER near Murphy (1,2)	APR-JUL			1730	58			2980
SNAKE RIVER at Weiser (1,2)	APR-JUL			1740	32			5465
SNAKE RIVER at Hells Canyon Dam (1,2)	APR-JUL			2020	33			6129
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	5384	8765	10300	48	11835	15216	21650

SOUTHSIDE SNAKE RIVER BASINS Reservoir Storage (1000 AF) - End of March					SOUTHSIDE SNAKE RIVER BASINS Watershed Snowpack Analysis - April 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of Last Yr Average	
		This Year	Last Year	Avg				
OAKLEY	74.5	28.7	42.8	33.0	Raft River	4	51	55
SALMON FALLS	182.6	25.6	63.0	63.8	Goose-Trapper Creeks	6	53	51
WILDHORSE RESERVOIR	71.5	39.6	51.3	38.2	Salmon Falls Creek	8	65	54
OWYHEE	715.0	421.0	584.5	579.0	Bruneau River	8	52	51
BROWNLEE	1419.3	1371.4	1088.8	930.0	Owyhee Basin Total	20	36	36

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

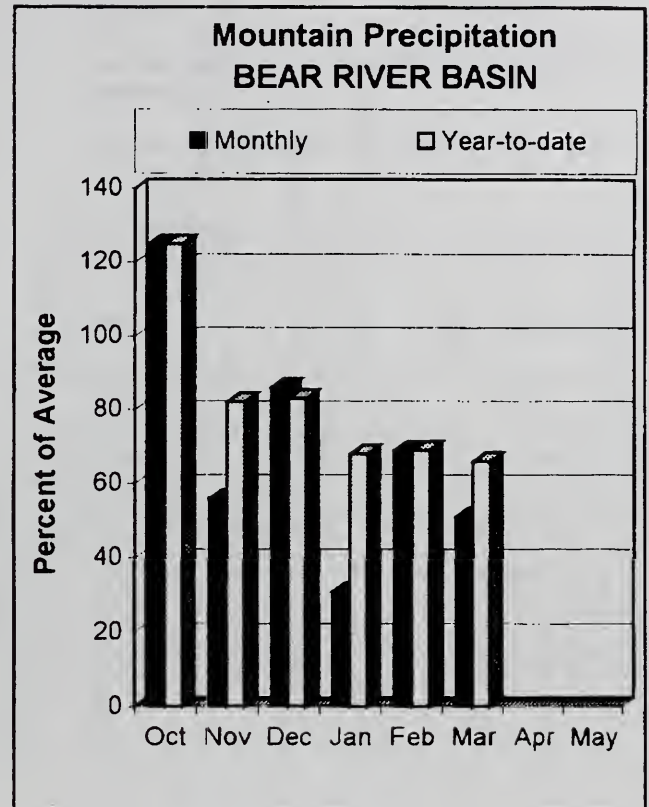
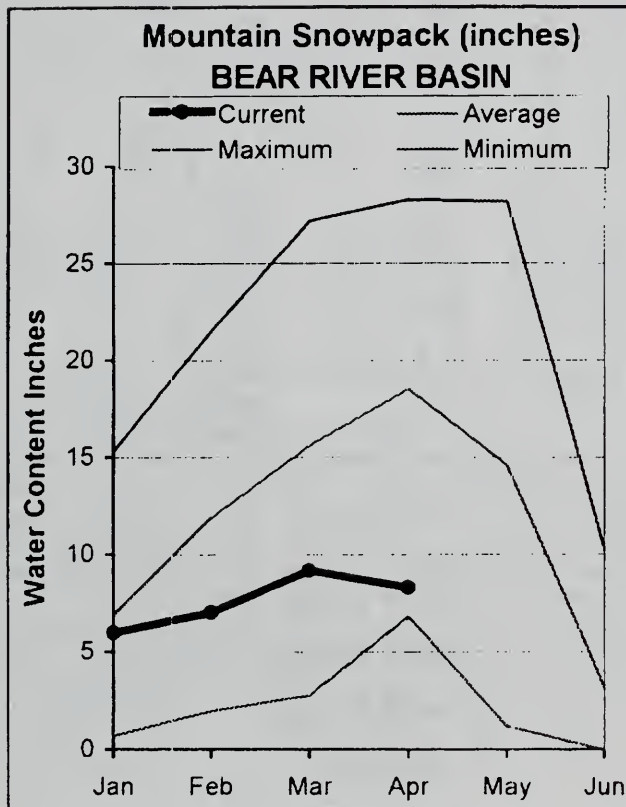
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

# BEAR RIVER BASIN

## APRIL 1, 2001



## WATER SUPPLY OUTLOOK

March precipitation was the lowest in the state at only 51% of average. Precipitation for the water year is 66% of average. Warm March temperatures allowed the snow to start melting early. Giveout SNOTEL site, located about 3 miles northeast of Montpelier, had only 1.8 inches of snow water on April 1, 15% of average. Only 1992 had an earlier melt out than this year based on April 1 data dating back to 1961. The Bear River basin snowpack ranges from 40-55% of average, except in the Malad basin which is only 25% of average. Overall, the Bear River basin snowpack is 44% of average, the 3<sup>rd</sup> lowest since 1961; 1992 was the lowest year and 1977 had the 2<sup>nd</sup> lowest April 1 snow levels. Streamflow forecasts decreased significantly from last month and now call for only 20% of average for the Bear River below Stewart Dam. Streamflow forecasts range from 20-45% of average in these basins, some of the lowest in the state. Storage in Bear Lake increased one percentage point from last month and is at 64% of capacity. Montpelier Creek Reservoir increased to 43% of capacity. These inflows were below normal for the month and will remain well below with the dismal snowpack. Bear Lake irrigators should have an adequate water supply. Other water users who rely on smaller tributaries or reservoirs may experience shortages, especially during the later summer months. Irrigators should stay in contact with their irrigation districts for more specific information.

BEAR RIVER BASIN  
Streamflow Forecasts - April 1, 2001

Forecast Point	Forecast Period	<<===== Drier =====>>		Future Conditions		===== Wetter =====>>		30-Yr Avg. (1000AF)
		=====		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
BEAR R nr Randolph, UT	APR-JUL	2.0	19.0	45	38	71	110	118
	APR-SEP	3.0	18.0	47	37	76	120	127
SMITHS FK nr Border, WY	APR-JUL	34	41	46	45	52	63	102
	APR-SEP	39	46	52	44	59	70	118
THOMAS FK nr WY-ID State Line (Disc.	APR-JUL	4.3	5.7	7.0	21	8.5	11.5	33
	APR-SEP	4.5	5.9	7.2	20	8.7	11.6	36
BEAR R blw Stewart Dam nr Montpelier	APR-JUL	3.0	21	58	20	95	150	288
	APR-SEP	7.0	36	69	21	112	174	327
MONTPELIER CK nr Montpelier (Disc)(2	APR-JUL	2.4	3.0	3.5	29	4.1	5.1	12.2
	APR-SEP	2.8	3.5	4.0	28	4.6	5.7	14.2
CUB R nr Preston	APR-JUL	2.7	8.2	12.0	26	15.8	21	47

BEAR RIVER BASIN Reservoir Storage (1000 AF) - End of March					BEAR RIVER BASIN Watershed Snowpack Analysis - April 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BEAR LAKE	1421.0	911.1	1111.3	998.0	Smiths & Thomas Forks	4	69	58
MONTPELIER CREEK	4.0	1.7	3.1	1.5	Bear River ab WY-ID line	6	60	52
					Montpelier Creek	2	61	47
					Mink Creek	4	50	42
					Cub River	3	48	41
					Bear River ab ID-UT line	17	55	45
					Malad River	3	26	25

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

**Streamflow Adjustment List For All Forecasts Published In Idaho Basin Outlook Report** Streamflow forecasts are projections of runoff volumes that would have occurred naturally without influences from upstream reservoirs or diversions. These values are referred to as natural or adjusted flows. To make these adjustments, changes in reservoir storage, diversions, and inter-basin transfers are added or subtracted from the observed (actual) streamflow volumes. The following list documents the adjustments made to each forecast point in this report. (Revised 12/2000).

#### Panhandle River Basins

KOOTENAI R AT LEONIA, ID  
+ LAKE KOOCANUSA (STORAGE CHANGE)  
BOUNDARY CREEK NEAR PORTHILL, ID - No Corrections  
MOYIE RIVER AT EASTPORT, ID - No Corrections  
SMITH CREEK NEAR PORTHILL, ID - No Corrections  
CLARK FORK AT WHITEHORSE RAPIDS, ID  
+ HUNGRY HORSE (STORAGE CHANGE)  
+ FLATHEAD LAKE (STORAGE CHANGE)  
+ NOXON RAPIDS RESV (STORAGE CHANGE)  
PEND OREILLE LAKE INFLOW, ID  
+ PEND OREILLE R AT NEWPORT, WA  
+ HUNGRY HORSE (STORAGE CHANGE)  
+ FLATHEAD LAKE (STORAGE CHANGE)  
+ NOXON RAPIDS (STORAGE CHANGE)  
+ PEND OREILLE LAKE (STORAGE CHANGE)  
+ PRIEST LAKE (STORAGE CHANGE)  
PRIEST R NR PRIEST R, ID  
+ PRIEST LAKE (STORAGE CHANGE)  
COEUR D'ALENE R AT ENAVILLE, ID - No Corrections  
ST. JOE R AT CALDER, ID - No Corrections  
SPOKANE R NR POST FALLS, ID  
+ COEUR D'ALENE LAKE (STORAGE CHANGE)  
SPOKANE R AT LONG LAKE, WA  
+ COEUR D'ALENE LAKE (STORAGE CHANGE)  
+ LONG LAKE, WA (STORAGE CHANGE)  
  
Clearwater River Basin  
DWORSHAK RESERVOIR INFLOW, ID  
+ DWORSHAK RESV (STORAGE CHANGE)  
- CLEARWATER R AT OROFINO, ID  
+ CLEARWATER R NR PECK, ID  
CLEARWATER R AT OROFINO, ID - No Corrections  
CLEARWATER R AT SPALDING, ID  
+ DWORSHAK RESV (STORAGE CHANGE)

#### Salmon River Basin

SALMON R AT SALMON, ID - No Corrections  
SALMON R AT WHITE BIRD, ID - No Corrections  
  
Weiser, Payette, Boise River Basins  
WEISER R NR WEISER, ID - No Corrections  
SF PAYETTE R AT LOWMAN, ID - No Corrections  
DEADWOOD RESERVOIR INFLOW, ID  
+ DEADWOOD R BLW DEADWOOD RESV NR LOWMAN  
+ DEADWOOD RESV (STORAGE CHANGE)  
LAKE FORK PAYETTE RIVER NR MCCALL, ID - No Corrections  
NF PAYETTE R AT CASCADE, ID  
+ CASCADE RESV (STORAGE CHANGE)  
NF PAYETTE R NR BANKS, ID  
+ CASCADE RESV (STORAGE CHANGE)

PAYETTE R NR HORSESHOE BEND, ID  
+ DEADWOOD RESV (STORAGE CHANGE)  
+ CASCADE RESV (STORAGE CHANGE)  
BOISE R NR TWIN SPRINGS, ID - No Corrections  
SF BOISE R AT ANDERSON RANCH DAM, ID  
+ ANDERSON RANCH RESV (STORAGE CHANGE)  
BOISE R NR BOISE, ID  
+ ANDERSON RANCH RESV (STORAGE CHANGE)  
+ ARROWROCK RESV (STORAGE CHANGE)  
+ LUCKY PEAK RESV (STORAGE CHANGE)

#### Wood and Lost River Basins

BIG WOOD R AT HAILEY, ID - No Corrections  
BIG WOOD R NR BELLEVUE, ID - No Corrections  
CAMAS CREEK NEAR BLAINE - No Corrections  
BIG WOOD R BLW MAGIC DAM NR RICHFIELD, ID  
+ MAGIC RESV (STORAGE CHANGE)  
LITTLE WOOD R NR CAREY, ID  
+ LITTLE WOOD RESV (STORAGE CHANGE)  
BIG LOST R AT HOWELL RANCH NR CHILLY, ID - No Corrections  
BIG LOST R BLW MACKAY RESV NR MACKAY, ID  
+ MACKAY RESV (STORAGE CHANGE)  
LITTLE LOST R BLW WET CK NR HOWE, ID - No Corrections  
LITTLE LOST R NR HOWE, ID - No Corrections (Disc)

#### Upper Snake River Basin

HENRYS FORK NR ASHTON, ID  
+ HENRYS LAKE (STORAGE CHANGE)  
+ ISLAND PARK RESV (STORAGE CHANGE)  
HENRYS FORK NR REXBURG, ID  
+ HENRYS LAKE (STORAGE CHANGE)  
+ ISLAND PARK RESV (STORAGE CHANGE)  
+ DIV FM HENRYS FK BTW ASHTON & ST. ANTHONY, ID  
+ DIV FM HENRYS FK BTW ST. ANTHONY & REXBURG, ID  
+ GRASSY LAKE (STORAGE CHANGE)  
FALLS R ABV YELLOWSTONE CANAL NR SQUIRREL, ID  
+ GRASSY LAKE (STORAGE CHANGE)  
TETON R ABV SO LEIGH CK NR DRIGGS, ID - No Corrections  
TETON R NR ST. ANTHONY, ID  
- CROSS CUT CANAL  
+ SUM OF DIVERSIONS ABV GAGE  
SNAKE R NR MORAN, WY  
+ JACKSON LAKE (STORAGE CHANGE)  
PALISADES RESERVOIR INFLOW, ID  
+ SNAKE R NR IRWIN, ID  
+ JACKSON LAKE (STORAGE CHANGE)  
+ PALISADES RESV (STORAGE CHANGE)  
  
SNAKE R NR HEISE, ID  
+ JACKSON LAKE (STORAGE CHANGE)  
+ PALISADES RESV (STORAGE CHANGE)

BLACKFOOT RESERVOIR INFLOW, ID  
 + BLACKFOOT RIVER  
 + BLACKFOOT RESERVOIR (STORAGE CHANGE)  
 SNAKE R NR BLACKFOOT, ID  
 + PALISADES RESV (STORAGE CHANGE)  
 + JACKSON LAKE (STORAGE CHANGE)  
 + DIV FM SNAKE R BTW HEISE AND SHELLY GAGES  
 + DIV FM SNAKE R BTW SHELLY AND BLACKFT, ID  
 PORTNEUF R AT TOPAZ, ID - No Corrections  
 AMERICAN FALLS RESERVOIR INFLOW, ID  
 + SNAKE RIVER AT NEELEY  
 + ALL CORRECTIONS MADE FOR HENRYS FK NR REXBURG, ID  
 + JACKSON LAKE (STORAGE CHANGE)  
 + PALISADES RESV (STORAGE CHANGE)  
 + DIV FM SNAKE R BTW HEISE AND SHELLY GAGES  
 + DIV FM SNAKE R BTW SHELLY AND BLACKFT GAGES

#### Southside Snake River Basins

OAKLEY RESERVOIR INFLOW, ID  
 + GOOSE CK ABV TRAPPER CK NR OAKLEY, ID  
 + TRAPPER CK NR OAKLEY, ID  
 SALMON FALLS CK NR SAN JACINTO, NV - No Corrections  
 BRUNEAU R NR HOT SPRINGS, ID - No Corrections  
 OWYHEE R NR GOLD CK, NV  
 + WILDHORSE RESV (STORAGE CHANGE)  
 OWYHEE R NR OWYHEE, NV  
 + WILDHORSE RESV (STORAGE CHANGE)  
 OWYHEE R NR ROME, OR - No Corrections  
 OWYHEE RESERVOIR INFLOW, OR  
 + OWYHEE R BLW OWYHEE DAM, OR  
 + OWYHEE RESV (STORAGE CHANGE)  
 + DIV TO NORTH AND SOUTH CANALS  
 SUCCOR CK NR JORDAN VALLEY, OR - No Corrections  
 SNAKE R - KING HILL, ID - No Corrections  
 SNAKE R NR MURPHY, ID - No Corrections  
 SNAKE R AT WEISER, ID - No Corrections  
 SNAKE R AT HELLS CANYON DAM, ID  
 + BROWNLEE RESV (STORAGE CHANGE)

#### Bear River Basin

BEAR R NR RANDOLPH, UT  
 + SULPHUR CK RESV (STORAGE CHANGE)  
 + CHAPMAN CANAL DIVERSION  
 + WOODRUFF NARROWS RESV (STORAGE CHANGE)  
 SMITHS FORK NR BORDER, WY - No Corrections  
 THOMAS FORK NR WY-ID STATELINE - No Corrections (Disc)  
 BEAR R BLW STEWART DAM, ID  
 + SULPHUR CK RESV (STORAGE CHANGE)  
 + CHAPMAN CANAL DIVERSION  
 + WOODRUFF NARROWS RESV (STORAGE CHANGE)  
 + DINGLE INLET CANAL  
 + RAINBOW INLET CANAL

MONTPELIER CK AT IRR WEIR NR MONTPELIER, ID (Disc)  
 + MONTPELIER CK RESV (STORAGE CHANGE)  
 CUB R NR PRESTON, ID - No Corrections

#### RESERVOIR CAPACITY DEFINITIONS (Units in 1,000 acre-feet, KAF)

Different agencies use various definitions when reporting reservoir capacity and contents. Reservoir storage terms include dead, inactive, active, and surcharge storage. This table lists these volumes for each reservoir, and defines the storage volumes NRCS uses when reporting capacity and current reservoir storage. In most cases, NRCS reports usable storage, which includes active and inactive storage. (Revised December 2000)

BASIN/ RESERVOIR	DEAD STORAGE	INACTIVE STORAGE	ACTIVE STORAGE	SURCHARGE STORAGE	NRCS CAPACITY	NRCS CAPACITY INCLUDES
<u>PANHANDLE REGION</u>						
HUNGRY HORSE	39.73	--	3451.00	--	3451.0	ACTIVE
FLATHEAD LAKE	Unknown	--	1791.00	--	1971.0	ACTIVE
NOXON RAPIDS	Unknown	--	335.00	--	335.0	ACTIVE
PEND OREILLE	406.20	112.40	1042.70	--	1561.3	DEAD+INACTIVE+ACTIVE
COEUR D'ALENE	--	13.50	225.00	--	238.5	INACTIVE+ACTIVE
PRIEST LAKE	20.00	28.00	71.30	--	119.3	DEAD+INACTIVE+ACTIVE
<u>CLEARWATER BASIN</u>						
DWORSKAK	--	1452.00	2016.00	--	3468.0	INACTIVE+ACTIVE
<u>WEISER/BOISE/PAYETTE BASINS</u>						
MANN CREEK	1.61	0.24	11.10	--	11.1	ACTIVE
CASCADE	--	46.70	646.50	--	693.2	INACTIVE+ACTIVE
DEADWOOD	--	--	161.90	--	161.9	ACTIVE
ANDERSON RANCH	24.90	37.00	413.10	--	450.1	INACTIVE+ACTIVE
ARROWROCK	--	--	272.20	--	272.2	ACTIVE
LUCKY PEAK	--	28.80	264.40	13.80	293.2	INACTIVE+ACTIVE
LAKE LOWELL	7.90	5.80	159.40	--	165.2	INACTIVE+ACTIVE
<u>WOOD/LOST BASINS</u>						
MAGIC	--	--	191.50	--	191.5	ACTIVE
LITTLE WOOD	--	--	30.00	--	30.0	ACTIVE
MACKAY	0.13	--	44.37	--	44.4	ACTIVE
<u>UPPER SNAKE BASIN</u>						
HENRYS LAKE	--	--	90.40	--	90.4	ACTIVE
ISLAND PARK	0.40	--	127.30	7.90	135.2	ACTIVE+SURCHARGE
GRASSY LAKE	--	--	15.18	--	15.2	ACTIVE
JACKSON LAKE	--	--	847.00	--	847.0	ACTIVE
PALISADES	44.10	155.50	1200.00	--	1400.0	DEAD+INACTIVE+ACTIVE
RIRIE	4.00	6.00	80.54	10.00	80.5	ACTIVE
BLACKFOOT	--	--	348.73	--	348.7	ACTIVE
AMERICAN FALLS	--	--	1672.60	--	1672.6	ACTIVE
<u>SOUTHSIDE SNAKE BASINS</u>						
OAKLEY	--	--	74.50	--	74.5	ACTIVE
SALMON FALLS	48.00	--	182.65	--	182.6	ACTIVE
WILDHORSE	--	--	71.50	--	71.5	ACTIVE
OWYHEE	406.83	--	715.00	--	715.0	ACTIVE
BROWNLEE	0.45	444.00	975.30	--	1419.3	INACTIVE+ACTIVE
<u>BEAR RIVER BASIN</u>						
WOODRUFF NARROWS	--	1.50	57.30	--	57.3	ACTIVE
WOODRUFF CREEK	--	4.00	4.00	--	4.0	ACTIVE
BEAR LAKE	--	--	1421.00	--	1421.0	ACTIVE
MONTPELIER CREEK	0.21	--	3.84	--	4.0	DEAD+ACTIVE

Interpreting Streamflow Forecasts

Introduction

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

**Most Probable (50 Percent Chance of Exceeding ) Forecast.** This forecast is the best estimate of streamflow volume that can be produced given current conditions and based on the outcome of similar past situations. There is a 50 percent chance that the streamflow volume will exceed this forecast value. There is a 50 percent chance at the streamflow volume will be less than this forecast value.

The most probable forecast will rarely be exactly right. Due to errors resulting from future weather conditions and a forecast equation itself. This does not mean that users should not use the most probable forecast; it means at they need to evaluate existing circumstances and determine the amount of risk they are willing to take by accepting this forecast value.

Decrease the Chance of Having Too Little Water

Users want to make sure there is enough water available for their operations. They might determine that a 50 percent chance of the streamflow volume being lower than the most probable forecast is too much risk to take. To reduce the risk of not having enough water available during the forecast period, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded (or possibly some point in between). These include:

**70 Percent Chance of Exceeding Forecast.** There is a 70 percent chance that the streamflow volume will exceed this forecast value. There is a 30 percent chance the streamflow volume will be less than this forecast value.

**90 Percent Chance of Exceeding Forecast.** There is a 90 percent chance that the streamflow volume will exceed this forecast value. There is a 10 percent chance the streamflow volume will be less than this forecast value.

Decrease the Chance of Having Too Much Water

Users want to make sure they don't have too much water. They might determine that a 50 percent chance of the streamflow being higher than the most probable forecast is too much of a risk to take. To reduce the risk of

having too much water available during the forecast period, users can base their operational decisions on one of the forecasts with a smaller chance of being exceeded. These include:

**30 Percent Chance of Exceeding Forecast.** There is a 30 percent chance that the streamflow volume will exceed this forecast value. There is a 70 percent chance the streamflow volume will be less than this forecast value.

**10 Percent Chance of Exceeding Forecast.** There is a 10 percent chance that the streamflow volume will exceed this forecast value. There is a 90 percent chance the streamflow volume will be less than this forecast value.

Using the forecasts - an example

**Using the Most Probable Forecast.** Using the example forecasts shown below, users can reasonably expect 36,000 acre-feet to flow past the gaging station on the Mary's River near Death between March 1 and July 31.

**Using the Higher Exceedence Forecasts.** If users anticipate a somewhat drier trend in the future (monthly and seasonal weather outlooks are available from the National Weather Service every two weeks), or if they are operating at a level where an unexpected shortage of water could cause problems, they might want to plan on receiving only 20,000 acre-feet (from the 70 percent chance of exceeding forecast). In seven out of ten years with similar conditions, streamflow volumes will exceed the 20,000 acre-foot forecast.

If users anticipate extremely dry conditions for the remainder of the season, or if they determine the risk of using the 70 percent chance of exceeding forecast is too great, then they might plan on receiving only 5000 acre-feet (from the 90 percent chance of exceeding forecast). Nine out of ten years with similar conditions, streamflow volumes will exceed the 5000 acre-foot forecast.

**Using the Lower Exceedence Forecasts.** If users expect wetter future conditions, or if the chance that five out of every ten years with similar conditions would produce streamflow volumes greater than 36,000 acre-feet was more than they would like to risk, they might plan on receiving 52,000 acre-feet (from the 30 percent chance of exceeding forecast) to minimize potential flooding problems. Three out of ten years with similar conditions, streamflows will exceed the 52,000 acre-foot forecast.

In years when users expect extremely wet conditions for the remainder of the season and the threat of severe flooding and downstream damage exists, they might choose to use the 76,000 acre-foot (10 percent chance of exceeding) forecast for their water management operations. Streamflow volumes will exceed this level only one year out of ten.

WEISER, PAYETTE, BOISE RIVER BASINS  
Streamflow Forecasts

Forecast Point	Forecast Period	<===== Drier =====>		Future Conditions		Wetter =====>		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	30% (1000AF)	10% (1000AF)		
SF PAYETTE RIVER at Lowman	APR-JUL	329	414	471	109	613	432	
	APR-SEP	369	459	521	107	673	488	
BOISE RIVER near Twin Springs (1)	APR-JUL	443	610	685	109	927	631	
	APR-SEP	495	670	750	109	1005		

For more information concerning streamflow forecasting ask your local NRCS field office for a copy of "A Field Office Guide for Interpreting Streamflow Forecasts" or visit our Web page.

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